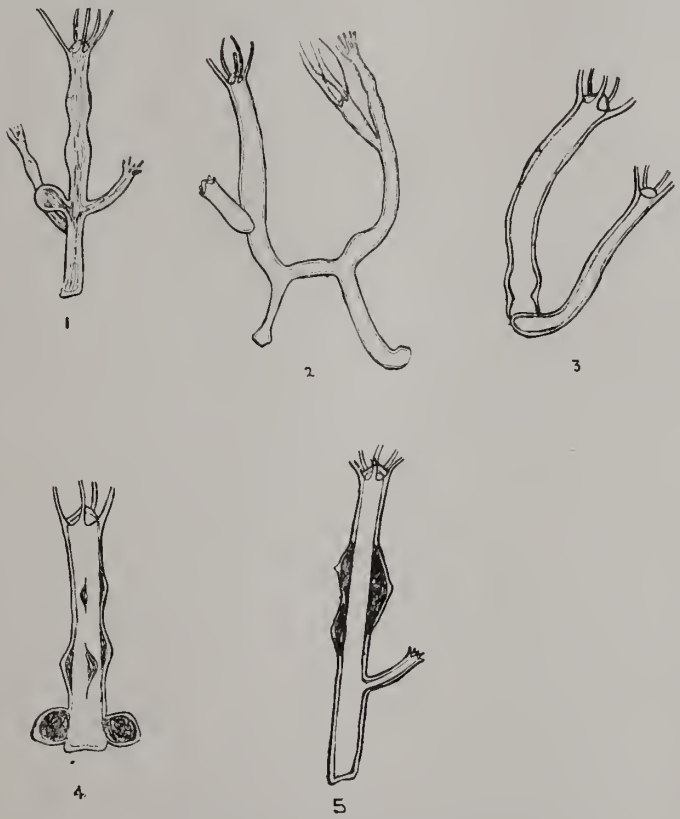
certainly to the same genus. It might be of interest to mention that in my specimen the first subcostal nervure of the right forewing is forked and so is Cu^1, while the venation of tho left forewing is perfectly normal and agrees with that shown in Petersen's figure. *I. crassicornis* is apparently wid ly distributed and has hitherto been recorded from Sweden, Saxony, Westphalia, Silesia, Hungary, Italy, Siberia, and as close to India as Japan.

CEDRIC DOVER.

CALCUTTA,
20th January 1922.

No. XXXII.—A NOTE ON THE REPRODUCTION OF THE COMMON HYDRA OF BENGAL (*HYDRA VULGARIS*, PALLAS).

The following observations were made on *Hydra vulgaris*, Pallas, in the months of August and September, 1920. The polyps were reared in cylindrical glass ars containing weeds from a pond.



EXPLANATION OF FIGURES.

Fig. 1.—Budding Hydra with characteristic moniliform appearance.
Fig. 2.—Colony formation of Hydra by budding.
Fig. 3.—Vertical fission of Hydra.
Fig. 4.—Hydra bearing spermaries in different stages of development.
Fig. 5.—Hydra bearing spermaries and a bud.

Fission.—An instance of vertical fission was witnessed on the 26th August, 1920. Fission was more or less complete and the two polyps were still united by the basal part of the column. One had five tentacles and the other four. The contraction and expansion of the column and tentacles of the polyps were independent. The gastro-vascular cavities were continuous and small particles were seen passing through the fluid from the gastral cavity of one into that of the other. The ectoderm and endoderm were distinct, and at the base of the polyps were observed two endodermal prominences. The ectoderm in this region was slightly depressed. (See Fig. 3.)

On the following day an endodermal wall was completely formed cutting off the gastro-vascular cavity of one polyp from that of the other. The ectodermal depression was invaginated. On the third day the ectoderm of the basal disc was formed and the polyps were sticking to each other by a secretion of mucus. The same evening they were observed to have separated. The difference in the number of tentacles of the two polyps was still maintained.

Though several polyps were reared for over two months this was the only instance of vertical fission observed.

In his account of Hydra in the *Memoirs of the Asiatic Society of Bengal*, I, p. 344, 1906, Dr. Annandale states that he has only seen three instances of vertical fission. Apparently this mode of reproduction is very rare.

Budding.—Several individuals bearing two or three buds were seen during the earlier part of August. Most of the buds were in a fairly advanced state with, as a rule, the same number of tentacles as in the parent polyp. The lower half of the column was slender and transparent, and as a result of swellings the upper half was moniliform (Fig. I). Usually the buds were confined to a small zone about the middle of the column; and it was remarkable that the column below this zone did not present a moniliform appearance. This phenomenon was noticeable in the budding individuals only. That the swellings are different from buds is suggested by the fact that they sometimes disappear and reappear in the same place. The entire gastro-vascular cavity is clear, and any food particle too large for it can at once be seen. Several individuals with the swellings were examined, and in none of them were they the result of distension by food particles or other foreign matter.

The budding polyps were generally found attached to the bottom and sides of the glass-jar, and to the underside of weeds.

The polyps attached to the sides lay usually inclined upside down with the tentacles fully expanded and hanging pendulously. A horizontal and rarely an erect position was however assumed by some individuals.

In the "Fauna" volume on Fresh-water Hydroids, Dr. Annandale states that he has never seen a bud giving rise to buds while attached to the parent hydra. I have seen an instance of this phenomenon on a single occasion (August 18, 1920). This polyp was found at the bottom of the jar. It was difficult to make out the order in which the buds had arisen. There were two fairly well developed buds, one with five tentacles, and the other with six. The former had one bud and the latter two (Fig. 2). It may be suggested that the first parent polyp underwent vertical fission for some distance down the column, when budding started precauciously on each of the daughter polyps. There was however no clear evidence to show that the colony formed as entirely due to budding or to vertical fission and budding. This branching hydra was unfortunately devoured by a dragon-fly larva a few days later, and no further observation could be made on it.

Branching in *H. oligactis* was noticed by Baini Prashad in Lahore.*

Spermaries.—From about the last week of August upto the 4th September, several polyps bore spermaries. Subsequent to this date sexual activity gra-

* See Journ., As. Soc., Bengal, (N. H. S.) XII, p. 143 (1916).

dually slackened, and about the middle of September no polyps bearing spermaries were observed. Bud-formation recommenced, lasting for a couple of days. The polyps were very thin and transparent.

The spermaries generally arise as small mound-shaped swellings on the upper half of the column. They are however not restricted to this region, as occasionally several may be seen in the basal part of the column (Fig. 4). The number of spermaries apparently varies, sometimes seven or eight being formed close to one another. They are found in different stages of development, and do not seem to be arranged in a definite manner. In the more developed spermaries the active movements of the spermatozoa can be observed under the low power of a microscope. As they mature a fine spray of sperms in the form of a faint white cloud is ejected from time to time from the papilliform process at their apex.

Sometimes buds are also formed simultaneously with the spermaries but they are always found below the region on which spermaries arise (Fig. 5). One after another the spermaries discharge their contents, and the polyps become very thin. A few however recommence budding, but the buds remain undeveloped.

H. SRINIVASARAO, M.A.

No. XXXIII.—FOLKLORE OF BIRDS AND BEASTS OF INDIA.

I have read with much interest Mr. Fitzpatrick's article in Vol. 28, No. 2, of the Journal on folklore of birds and beasts and would like to know if he has any stories connecting the actions of birds and beasts with a forecast of the monsoon.

Sir Gilbert Walker, our chief rain-maker, may base his forecast on such things as barometrical pressure in places in South America or Zanzibar, a low or high Nile, late snowfall in the Himalayas, etc., but we who live in agricultural districts *know* that the monsoon is really foretold by the blossoming of the *nim* trees and *khed* bushes, the direction of the wind at *Holi* and the lucky and unlucky days on which lightning is seen.

I remember last year there was lightning one day early in June and I was told there would be no rain for 72 days. There was none for about 45 days which was not a bad effort to fulfil the prophecy !

But the clinching test is the position of the eggs in the nest of a 'Did he do it' (Red Wattled Lapwing). If the pointed ends all point to the centre of the nest a good monsoon is assured. This belief prevails in Cutch and Kathiawar and probably in other parts of India. Yesterday I found a 'Did he do it's' nest with three eggs in the happy position, so it is now up to the monsoon to do its bit according to rule.

E. O'BRIEN, Lt.-Colonel.

Bhuj Cutch,
17*th May* 1922.

No. XXXIV.—A LONG NEGLECTED GROUP OF INSECTS.

The purpose of this note is to draw the attention of the numerous naturalists who have the chance of collecting in desert and semi-desert parts of India, as well as in adjacent countries (Persia, Baluchistan, Afghanistan, etc.), to a group of insects which is always neglected by collectors. The group is *Orthoptera, i.e.*, grasshoppers, locusts, crickets, mantids and stick-insects ; all these insects are most numerous and various in dry plains, on stony hills, on sand dunes, and in dry grassy places with scattered shrubbery ; many species are